

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-2 (cancelled).

3 (currently amended). ~~The method as claimed in claim 2~~ A
method for detecting duplicate images comprising the steps of:
providing at least two images of an original scene captured at
determinable times by a photographic camera, where the camera records a time of
camera capture of the original scene;
computing an indication of image content for each image;
determining the time of camera capture of each of the images; and
evaluating the indication of image content and the time of camera
capture to determine whether the images are duplicate images;
wherein the step of computing an indication of image content
comprises:
dividing each image into blocks; and
computing an indication of image content in each block; and
wherein each image is divided into 4x4 or ~~fewer~~ 3x3 blocks.

4 (original). The method as claimed in claim 3 wherein each image is divided into 3x3 blocks.

5 (currently amended). The method as claimed in claim ~~2~~ 3 wherein the step of computing an indication of image content in each block comprises computing a histogram for each block.

6 (original). The method as claimed in claim 5 wherein the step of evaluating the indication of image content and the time of camera capture comprises comparing one or more blocks of one image, using a histogram intersection metric, to corresponding blocks of another image and using the time

difference between capture of the two images to determine whether the images are duplicate images.

7 (currently amended). The method as claimed in claim 1 ~~3~~
~~wherein the step of computing an indication of image content comprises:~~
~~dividing each image into blocks,~~ wherein one or more blocks
represent a foreground area of the images; and
said computing further comprises computing an indication of
image content ~~in each block and~~ in the foreground areas of each image.

8 (original). A method for detecting duplicate images comprising
the steps of:

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- (a) providing a plurality of images captured at determinable times;
 - (b) dividing each image into an X number of blocks, wherein one or more blocks represent a central area and a foreground area;
 - (c) computing histograms for each block of each image, and block histogram intersection values obtained from comparisons between histograms from corresponding blocks from each image;
 - (d) determining whether each block histogram intersection value for at least those blocks surrounding the central area is higher than a threshold T_1 , and determining whether the number of intersection values below the threshold T_1 are not greater than a certain number N;
 - (e) computing an average histogram intersection value of the foreground area, and determining whether the average block histogram intersection value of the foreground area is not lower than a threshold T_2 ;
 - (f) determining whether the average histogram intersection value of the foreground is higher than a threshold T_3 ;
 - (g) determining whether an average of the X number of block histogram intersection values is higher than a threshold T_4 ;
 - (h) determining whether the average of the X number of block histogram intersection values is higher than a threshold T_5 ;
 - (i) determining whether the time difference between capture of the images is less than a threshold T_6 ;

(j) determining whether the average of the X number of block histogram intersection values is higher than a threshold T_7 ; and

(k) determining whether the time difference between the capture of the images is less than a threshold T_8 ; and

(l) utilizing the determinations made in steps (d) through (k) to determine if any of the images are duplicates.

9 (original). The method as recited in claim 8 wherein said step (h) further provides that $T_5 < T_4$.

10 (original). The method as recited in claim 8 wherein said step (j) further provides that $T_5 < T_4 < T_7$.

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11 (original). The method as recited in claim 8 wherein said step (k) further provides that $T_6 < T_8$.

12 (original). The method as recited in claim 8 wherein said step (b) comprises dividing each image into a configuration of 4x4 or fewer blocks.

13 (original). The method as recited in claim 12 wherein said step (b) comprises dividing each image into a configuration of 3x3 blocks.

14 (original). A method for detecting duplicate images comprising the steps of:

(a) providing a plurality of images;

(b) dividing each image into an X number of blocks, wherein one or more blocks represent a central area and a foreground area;

(c) computing histograms for each block, and block histogram intersection values obtained from comparisons between histograms from corresponding blocks from each image;

(d) determining whether each block histogram intersection value for at least those blocks surrounding the center block is higher than a threshold T_1 , and determining whether the number of intersection values below the threshold T_1 are not greater than a certain number N;

- (e) computing an average histogram intersection value of the foreground area, and determining whether the average block histogram intersection value of the foreground area is not lower than a threshold T_2 ;
- (f) determining whether the average histogram intersection value of the foreground is higher than a threshold T_3 ;
- (g) determining whether an average of the X number of block histogram intersection values is higher than a threshold T_4 ;
- (h) determining whether the average of the X number of block histogram intersection values is higher than a threshold T_5 ; and
- (i) utilizing the determinations made in steps (d) through (h) to determine if any of the images are duplicates.

C² 15 (original). The method as recited in claim 14 wherein said step (h) further provides that $T_5 < T_4$.

16 (original). The method as recited in claim 14 wherein said step (b) comprises dividing each image into a configuration of 4x4 or fewer blocks.

17 (original). The method as recited in claim 16 wherein said step (b) comprises dividing each image into a configuration of 3x3 blocks.

18-19 (cancelled).

20 (currently amended). ~~The computer program product as claimed in claim 19~~ A computer program product for detecting duplicate images comprising: a computer readable storage medium having a computer program stored thereon for performing the steps of:

providing at least two images of an original scene captured at determinable times by a photographic camera, where the camera records a time of camera capture of the original scene;

computing an indication of image content for each image;

determining the time of camera capture of each of the images; and

evaluating the indication of image content and the time of camera capture to determine whether the images are duplicate images;

wherein the step of computing an indication of image content comprises:

dividing each image into blocks; and
computing an indication of image content in each block; and
wherein each image is divided into 4x4 or ~~fewer~~ 3x3 blocks.

21 (original). The computer program product as claimed in claim 20 wherein each image is divided into 3x3 blocks.

22 (currently amended). The computer program product as claimed in claim ~~19~~ 20 wherein the step of computing an indication of image content in each block comprises computing a histogram for each block.

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23 (original). The computer program product as claimed in claim 22 wherein the step of evaluating the indication of image content and the time of camera capture comprises comparing one or more blocks of one image, using a histogram intersection metric, to corresponding blocks of another image and using the time difference between capture of the two images to determine whether the images are duplicate images.

24 (currently amended). The computer program product as claimed in claim ~~18~~ 20 ~~wherein the step of computing an indication of image content comprises:~~

~~dividing each image into blocks,~~ wherein one or more blocks represent a foreground area of the images; and

wherein said computing further comprises computing an indication of image content ~~in each block and~~ in the foreground areas of each image.

25 (cancelled).

26 (currently amended). The method as claimed in claim ~~25~~ 33 wherein the time of original capture is determined by extracting encoded time information from a film strip used to capture images of the original scene.

27 (currently amended). The method as claimed in claim ~~25~~ 33 wherein the time of original capture is determined by extracting encoded time information from images provided by a digital camera.

28 (currently amended). The method as claimed in claim ~~25~~ 33 further comprising the step of generating an average of the similarity metrics for the blocks and the step of evaluating the similarity metric comprises evaluating the average of the similarity metrics and the time of capture to determine whether the images are duplicate images.

29 (cancelled).

30 (currently amended). ~~The method as claimed in claim 25~~ A method for detecting duplicate images comprising the steps of:

providing at least two images originally captured by a photographic camera at determinable times from original scenes;

computing an indication of image content for each image by dividing each image into blocks, computing an indication of image content in each block, and comparing the computed indication of image content in each corresponding block for the two images to generate a similarity metric for each block;

determining the time of original capture of each of the images; and
evaluating the similarity metric for each block and the time of original capture to determine whether the images are duplicate images;

wherein the step of computing an indication of image content further comprises assigning ~~one~~ two or more blocks to represent a foreground area of the images, and computing an indication of image content in each block and in the foreground areas of each image.

31 (new). The method as claimed in claim 6 wherein the step of evaluating the indication of image content and the time of camera capture comprises comparing one or more blocks of one image, using a histogram intersection metric, to corresponding blocks of another image and using the time

difference between capture of the two images to determine whether the images are duplicate images; and wherein the histogram intersection metric has the formula:

$$Inter(R, C) = \frac{\sum_{i=1}^n \min(R_i, C_i)}{\sum_{i=1}^n R_i}$$

where R is the histogram of a reference, C is the histogram of a candidate, and n is the number of bins.

32 (new). The method as claimed in claim 20 wherein two or more blocks represent a foreground area of the images; and

said computing further comprises computing an indication of image content in the foreground areas of each image.

33 (new). A method for detecting duplicate images comprising the steps of:

providing at least two images originally captured by a photographic camera at determinable times from original scenes;

computing an indication of image content for each image by dividing each image into blocks, computing an indication of image content in each block, and comparing the computed indication of image content in each corresponding block for the two images to generate a similarity metric for each block;

determining the time of original capture of each of the images; and evaluating the similarity metric for each block and the time of original capture to determine whether the images are duplicate images;

wherein the step of evaluating the similarity metric for each block and the time of capture comprises comparing one or more blocks of one image, using a histogram intersection metric, $Inter(R, C)$, to corresponding blocks of another image and using the time difference between capture of the two images to determine whether the images are duplicate images;

wherein:

$$Inter(R, C) = \frac{\sum_{i=1}^n \min(R_i, C_i)}{\sum_{i=1}^n R_i}$$

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where $Inter(R, C)$ is the histogram intersection metric, R is the histogram of a reference, C is the histogram of a candidate, and n is the number of bins.
